Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2006 Proceedings

Americas Conference on Information Systems (AMCIS)

December 2006

The Relationship between E-Commerce Adoption and Organizational Culture

David Nickels
Accounting & Information Systems- School Of Business- Emporia State University

Obyung Kwun
Accounting & Information Systems- School Of Business- Emporia State University

The Relationship between E-Commerce Adoption and Organizational Culture

David W. Nickels
Accounting & Information Systems
School Of Business
Emporia State University
Emporia, KS USA 66801
dnickels@emporia.edu

Obyung Kwun
Accounting & Information Systems
School Of Business
Emporia State University
Emporia, KS USA 66801
okwun@emporia.edu

ABSTRACT

Research has suggested that gaining a competitive advantage requires users of technology to be early adopters and that higher levels of e-commerce adoption are associated with increased levels of organizational performance. While e-commerce has been studied in detail, the importance of organizational culture in the level of e-commerce adoption has not been explored in depth. Organizational culture can be a limiting factor on the acceptance of technological change and has been linked with organizational performance. Organizational cultures with an emphasis on external orientation and flexible structure, "adhocracies," are typified by leaders who are innovators and risk takers. An argument can be made that a culture promoting innovation and risk acceptance would provide needed support for higher levels of adoption of new technologies. This paper proposes a research framework for exploring the proposition that organizations exhibiting higher levels of an adhocracy culture orientation will also exhibit higher levels of e-commerce adoption.

Keywords

Organizational culture, electronic commerce, e-commerce, e-commerce adoption

INTRODUCTION

Internet-enabled business processes have become an essential requirement for businesses to interact with their partners and customers. E-commerce volume in both business to consumer (B2C) and business to business (B2B) contexts has been growing rapidly. While the market volume in the B2C sector is expected to grow from $81 billion in 2005 to $144 billion in 2010 (Muse, 2006), the overwhelming majority of e-commerce volume is represented by the B2B sector, which was projected to reach $4.3 trillion by 2005 (ClickZ Stats, 2002).

E-commerce is beneficial to both businesses and consumers by removing time and space barriers. For consumers, e-commerce provides greater information richness in less time. B2B e-commerce also provides a number of benefits such as high accessibility, scalability, interoperability, interactivity, and greater information richness (Ratnasingam, 2005). The growing importance of e-commerce is reflected in strategic planning activities and is seen as necessary for the survival of many businesses (Maguire, Terziovski and Samson, 2001). In addition, many companies that adopt e-commerce hope to achieve competitive advantage (Berrill, Goode and Hart, 2004). However, the adoption of e-commerce is not straightforward: it does not guarantee benefits, and the extent to which companies use the Internet in their business activities varies.

The notion of the desirability of higher levels of e-commerce adoption has a precedent in the IT (information technology) integration research literature. Venkatraman (1994) proposed several advantages to the organization from increasing levels of IT integration in business processes: increased capabilities for first mover opportunities, greater organizational responsiveness and flexibility, and increased capacities for horizontal integration with business partners. In the e-commerce research literature, greater levels of e-commerce adoption have been linked with improved organizational performance (Kraemer, Gibbs and Dedrick, 2002). Companies that adopt internet technology in various activities are aware of this benefit and hope to improve competitive advantage, communication, and products and services when they adopt e-commerce (Berrill, Goode and Hart, 2004).

Organizational culture has been suggested as an important factor that influences successful adoption and implementation of IS (information systems) (Laudon and Laudon, 2006). It follows that IT adoption processes, especially those that require

changes in business processes, may require changes in culture. Thus, adoption of e-commerce involves changes in IT and business processes, which, in turn, are impacted by organizational culture. However, the impact of organizational culture on e-commerce adoption has yet to be explored in-depth.

The purpose of this paper is to propose a framework for the exploration of the relationship between organizational culture type and the level of e-commerce adoption. This framework is being used as the basis for research in progress.

BACKGROUND

E-Commerce Adoption

Because of the importance placed on e-commerce, its adoption by organizations has been an attractive topic to IS researchers. In these studies, e-commerce has been viewed as a socio-technical system that requires sharing information and maintaining relationships with business partners. In the vein of previous information systems acceptance research, many studies in e-commerce have applied the Technology Acceptance Model (TAM) (Davis, 1989) framework to explain factors that influence e-commerce adoption. Another framework cited in multiple studies addressing e-commerce IS adoption has been Diffusion of Innovations theory (Rogers, 1995). Among those studies, several organizational factors purported to influence e-commerce adoption have been noted.

Prior organizational competencies have been found to influence the organization's strategic commitment to e-commerce and Internet adoption, where strategic orientation to new technologies and environments is related to the existing organizational capabilities (Kowtha and Choon, 2001; Mehrtens, Cragg and Mills, 2001). In relation to the time of adoption from Diffusion of Innovations theory, organizations that are early adopters of e-commerce technology are those viewing it as being compatible with existing organizational systems and processes and having greater organizational support for adoption (Beatty, Shim and Jones, 2001). The support of top management has also been found to positively influence the degree of e-commerce assimilation in firms (Chatterjee, Grewal and Sambamurthy, 2002).

A recurring theme in this literature is that in e-commerce adoption, the compatibility of organizational culture with e-commerce matters. Beatty, Shim, and Jones (2001) found that organizations perceiving Web site use as compatible with the existing organizational culture were earlier adopters than organizations perceiving some level of incompatibility between the two. Organizational cultures not supporting innovation and the use of new technologies have been identified as a barrier to B2B e-commerce adoption (Gibbs , Kraemer and Dedrick, 2003; Teo and Ranganathan, 2004). Teo and Ranganathan (2004) have also asserted that organizational culture presents a potentially critical barrier between firms collaborating in B2B e-commerce activities. The compatibility between an organization's culture and e-commerce has been found to exert a strong positive influence on e-commerce adoption in small and medium size enterprises (Grandon and Pearson, 2004). In relation to organizational culture attributes, organizational cultures supporting innovativeness have been associated with higher capacities for successful adaptation and innovation (Hurley and Hult, 1998).

As previously noted, Diffusions of Innovation theory (Rogers, 1995) has been used as a basis for exploring e-commerce adoption in multiple studies (e.g. Beatty, Shim and Jones, 2001; Chircu and Kauffman, 2000; Kshetri and Dholakia, 2002). Diffusion is defined as the process by which an innovation is communicated through certain channels over time (Rogers, 1995). An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The speed with which an innovation is adopted can be affected by characteristics of individuals or units of a social system. Here, there is an obvious connection to the concept of organizational culture, which is rooted in the ongoing interactions among individuals in the organizational social system.

In Diffusion of Innovations theory (Rogers, 1995), the characteristics of an innovation impacting its adoption are: (1) relative advantage (the degree to which an innovation is perceived as better than those currently in use), (2) compatibility (the degree to which an innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters), (3) complexity (the degree to which an innovation is perceived as difficult to understand and use), (4) trialability (the degree to which an innovation may be experimented with on a limited basis, and (5) observability (the degree to which the results of an innovation are visible to others). It is the compatibility characteristic that is of interest here because "existing values, past experiences, and needs of potential adopters" are embodied in the prevailing organizational culture.

Organizational Culture

Identified as an important management issue since the 1980s, organizational culture has been the subject of numerous studies found in the management literature. Specifically, this construct has been studied as a facet of organizational behavior.

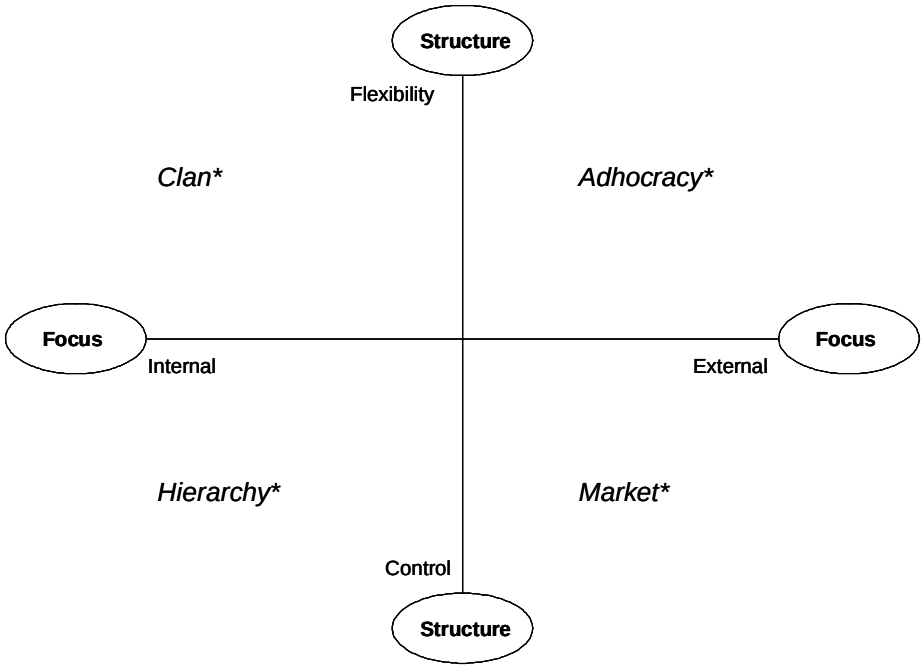
Edgar Schein, widely cited in the literature addressing organizational culture, defines culture as "… the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define in a basic 'taken-for-granted' fashion an organization's view of itself and the environment" (Schein, 1985, p. 6).

According to Schein (1992), organizational culture operates at three conceptual levels:
(1) Artifacts – the outermost level as evidenced by visible organizational structures and processes,
(2) Espoused Values – strategies, goals, and philosophies as evidenced by espoused justifications, and
(3) Basic Underlying Assumptions – the innermost level, constituted of unconscious, taken-for-granted beliefs, perceptions, thoughts, and feelings.

Denison (1990) has proposed a definition of organizational culture that expands the concept of organizational culture beyond just a set of underlying beliefs and assumptions to include "the set of management practices and behaviors that both exemplify and reinforce those basic principles" (p. 2). This definition suggests that organizational culture can be operationalized as a set of management practices and behaviors, and as such, would be a measurable entity.

Cameron and Quinn (1999) have identified both qualitative and quantitative strategies for measuring organizational culture. They argue that a quantitative approach is valid if it measures the underlying beliefs and assumptions that represent culture rather than surface attributes reflecting organizational climate. Based on this premise, they have developed an instrument, the Organizational Culture Assessment Instrument (OCAI), which they assert can be used to reliably measure the prevailing organizational culture.

The foundation of Cameron and Quinn's OCAI, the Competing Values Framework (Quinn and Rohrbaugh, 1983), is used as the basis for delineating a dimensional model of organizational culture. Originally proposed as a "framework for organizational analysis" (Quinn and Rohrbaugh, 1983, p. 1), the Competing Values Framework provides the theoretical basis for Cameron and Quinn's (1999) profiles of organizational culture. The Competing Values Framework, with Cameron and Quinn's (1999) culture types added, is illustrated in Figure 1.



** Culture type (Cameron & Quinn, 1999)*

Figure 1: Competing Values Framework

This framework graphically depicts a profile of organizational culture along a continuum of two dimensions: the relative degrees of inward/outward orientation and stability/flexibility of the organizational structure. Graphically, these dimensions result in a quadrant, where competing values are represented on two diagonals among the four quadrants. Specifically, the competing values are internal vs. external orientation and flexibility vs. stability in structure.

Cameron and Quinn (1999) have, in adopting this framework for depicting organizational culture, named each of the four quadrants to describe the associated characteristics of organizational culture. Organizations where an inward orientation and flexibility in structure are predominant are said to have "Clan" cultures. Organizations having predominantly outward orientations and exhibiting flexibility in structure are termed as having an "Adhocracy" culture. Organizations with a primarily outward orientation along with an emphasis on stable and controlled structures are called "Market" cultures. And, finally, organizations with inward orientations and structure characterized by stability and control are said to have a culture of "Hierarchy."

According to Cameron and Quinn (1999), organizations with a clan culture orientation are characterized as having friendly, supportive work environments. Supervisors are seen as mentors, and the concern for people, both employees and customers, is high. An emphasis is placed on teamwork.

The dimensional opposite to the clan culture is found in the market culture quadrant. Here, according to Cameron and Quinn (1999), a major characteristic is a hard-driving, competitive organizational environment. Managers are demanding, and a major organizational goal is winning in a competitive marketplace.

Organizations with hierarchy cultures are described as having formalized, structured work environments. A major emphasis is placed on coordination of efforts with the achievement of efficiency as a central focus. The management of employees is procedure driven, and predictability is valued.

The diametric opposite of the hierarchy culture is found in the adhocracy culture, which is the organizational culture characteristic of interest in this research. In organizations predominated by an adhocracy culture, risk taking is acceptable. Cameron and Quinn (1999) characterize these organizations as "dynamic, entrepreneurial, and creative" places to work (p. 58). Innovation and experimentation are valued, and employees are encouraged to act with individual initiative.

It is important to note that Cameron and Quinn (1999) assert that there is no inherent superiority of any one of these organizational profiles over the others. In other words, different predominant organizational cultures can be equally successful in promoting organizational effectiveness among different organizations and under different environmental circumstances. The environmental circumstance of interest here is the level of adoption of e-commerce technology.

MODEL AND PROPOSITION

Grandon and Pearson (2004) have proposed and validated a model of e-commerce adoption in which factors they term "External Pressure," "Perceived Ease of Use," "Perceived Usefulness," and "Compatibility" were found to be statistically significant as determinants of e-commerce adoption. They describe the Compatibility factor as an indication of the compatibility between "e-commerce and the firm's culture, values, and preferred work practices" (p. 209). However, the needed characteristics of the firm's culture, values, and work practices for compatibility with e-commerce are not identified in Grandon and Pearson's (2004) study.

Venkatraman (1994) concludes that higher levels of IT-enabled business transformation involve higher degrees of change in organizational routines. This strongly implies the need for higher degrees of risk acceptance. In relation to e-commerce adoption, the adoption of and the success in e-commerce has been tied to organizations' risk acceptance and tolerance of uncertainty (Featherman and Pavlou, 2003; Gibbs, Kraemer and Dedrick, 2003), both of which are characteristics of adhocracy cultural orientations in organizations. Eid, Trueman and Ahmed (2002) reported that multiple studies have supported an assertion that an organizational culture accepting of change is a B2B critical success factor. To explore the cultural component of the Compatibility factor as characterized in the Grandon and Pearson model, we will investigate the relationship between the degree of adhocracy cultural type present in organizations and the level of e-commerce adoption.

Levels of e-commerce adoption can be defined as the extent of the use of e-commerce for a number of different activities such as sales, marketing, procurement, and sharing information (Kraemer, Gibbs and Dedrick, 2002). Although higher levels of e-commerce are associated with greater benefits, they may also require greater changes, which carry higher risk and

uncertainty (Venkatraman, 1994). However, the potential benefits of higher levels of e-commerce adoption for most organizations far outweigh the risks.

Specifically, the proclivity of decision makers exhibiting higher levels of adhocracy organizational culture attributes to take risks and to innovate should lead to higher levels of e-commerce adoption. Therefore, we propose that:

> **Higher degrees of the adhocracy culture type among senior-level decision makers in organizations will be associated with higher levels of e-commerce adoption.**

The research model is illustrated in Figure 2.

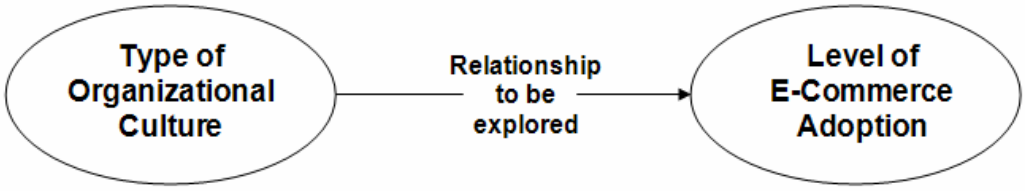


Figure 2: Research Model

DISCUSSION

This paper details the basis for a research study in progress on the nature of the relationship between organizational culture and the level of e-commerce adoption in organizations. Research in IT adoption and e-commerce has shown strategic benefits from early adoption of e-commerce and a greater extent of e-commerce adoption. Today's fast changing business environment requires changes in assumptions, values, and the way of doing business. As e-commerce activities continue exponential growth in volume, there will be increasing demands on organizations to change the ways in which they interact with customers, suppliers, and business partners. In order for organizations to remain competitive in e-commerce capabilities, it would seem crucial that they assimilate an organizational culture environment that promotes innovation, risk-taking, and flexibility.

Although the importance of organizational culture has been implied across multiple studies of e-commerce adoption, no studies identifying the characteristics of organizational culture that would best support e-commerce adoption were found in the literature review for this study. Specifically, it is proposed that there will be a positive correlation between the level of e-commerce adoption and the degree of adhocracy cultural characteristics among the perspectives of senior-level organizational management. The central proposition of this paper is that in the context of the level of e-commerce adoption, organizational culture matters.

REFERENCES

1. Beatty, R., Shim, J. and Jones, M. (2001) Factors influencing corporate web site adoption: A time-based assessment, *Information & Management*, 38, 6, 337-354.
2. Berrill, A., Goode, S. and Hart, D. (2004) Managerial expectations of internet commerce adoption after the "tech wreck" of 2000-an Australian perspective, *Journal of Global Information Technology Management*, 7, 3, 45-63.
3. Cameron, K. and Quinn, R. (1999) Diagnosing and changing organizational culture: Based on the competing values framework, Addison-Wesley, Reading, MA.
4. Chatterjee, D., Grewal, R. and Sambamurthy, V. (2002) Shaping up for e-commerce: Institutional enablers of the organizational assimilation of web technologies, *MIS Quarterly*, 26, 2, 65-89.
5. Chircu, A. and Kauffman, R. (2000) Limits to value in electronic commerce-related IT investments, *Journal of Management Information Systems*, 17, 2, 59-80.
6. ClickZ Stats (2002) B2B e-commerce headed for trillions, Retrieved from http://clickz.com/stats/sectors/b2b/article.php/986661on 2/14/2006.

7. Davis, F. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly*, 13, 3, 319-339.
8. Denison, D. R. (1990) Corporate culture and organizational effectiveness. John Wiley & Sons, New York.
9. Eid, R., Trueman, M. and Ahmed, A. (2002) A cross-industry review of B2B critical success factors, *Internet Research*, 12, 2, 110-123.
10. Featherman, M. and Pavlou, P. (2003) Predicting e-services adoption: a perceived risks facets perspective, *International Journal of Human-Computer Studies*. 59, 451-474.
11. Gibbs, J., Kraemer, K. and Dedrick, J. (2003) Environment and policy factors shaping global e-commerce diffusion: A cross-country comparison, *The Information Society*, 19, 1, 5-18.
12. Grandon, E. and Pearson, J. (2004) Electronic commerce adoption: An empirical study of small and medium US businesses, *Information & Management*, 42, 1, 197-216.
13. Hurley, R. and Hult, G. (1998) Innovation, Market Orientation, and Organizational Learning: An Integration and Empirical Examination. *Journal of Marketing*, 62, 3, 42-54.
14. Kowtha, N. and Choon, T. (2001) Determinants of website development: A study of electronic commerce in Singapore, *Information & Management*, 39, 3, 227-242.
15. Kraemer, K., Gibbs, J. and Dedrick, J. (2002) Impacts of globalization on e-commerce adoption and firm performance: A cross-country investigation, Retrieved from http://www.crito.uci.edu/publications/pdf/gec/JIBS.pdf on 2/15/2006.
16. Kshertri, N. and Dholakia, N. (2002) Determinants of the global diffusion of e-commerce, *Electronic Markets*, 12, 2, 120-129.
17. Laudon, K. and Laudon, J. (2006) Management information systems: Managing the digital firm (9th Ed.), Prentice Hall, Upper Saddle River, NJ.
18. Maguire, C., Terziovski, M. and Samson, D. (2001). Reshaping the organisation based on e-commerce strategy, Retrieved from http://www.fsed.org/researchprojects/project2a.html on 2/14/2006.
19. Mehrtens, J., Cragg, P. and Mills, A. (2001) A model of internet adoption by SMEs, *Information & Management*, 39, 3, 165-176.
20. Muse, D. (2006) Online shopping to grow — Are you ready? Retrieved from http://www.ecommerce-guide.com/news/article.php/3583651 on 2/14/2006.
21. Quinn, R. and Rohrbaugh, J. (1983) A spatial model of effectiveness criteria: Toward a competing values approach to organizational analysis, *Management Science*, 29, 3, 363-377.
22. Ratnasingam, P. (2005) E-commerce relationships: The impact of trust on relationship continuity, *International Journal of Commerce and Management*, 15, 1, 1-16.
23. Rogers, E. (1995) Diffusion of innovations (4th edition), The Free Press, New York.
24. Schein, E. (1985) Organizational culture and leadership: A dynamic view, Jossey-Bass Publishers, San Francisco.
25. Schein, E. (1992) Organizational culture and leadership (2^{nd} ed.), Jossey-Bass Publishers, San Francisco.
26. Teo, T. and Ranganathan, C. (2004) Adopters and non-adopters of business-to-business electronic commerce in Singapore, *Information & Management*, 42, 1, 89-102.
27. Venkatraman, N. (1994) IT-enabled business transformation: From automation to business scope redefinition, *Sloan Management Review*, 35, 2, 73-87.